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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,448	09/30/2003	Kevin Scott Beyer	SVL920030088US1	2447
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IP AUTHORITY, LLC RAMRAJ SOUNDARARAJAN 9435 LORTON MARKET STREET #801 LORTON, VA 22079			EXAMINER MYINT, DENNIS Y	
			ART UNIT 2162	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/605,448

Applicant(s)

BEYER ET AL.

Examiner

Dennis Myint

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2162

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 23-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 23-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7 June 2007 has been entered.

2. The amendment filed on 7 June 2007 has been received and entered. Claims 1-22 have been cancelled. Claims 23-44 are newly added. As such, claims 23-44 are pending. Claims 23, 31, and 39 are independent claims.

### ***Response to Arguments***

3. The applicant's arguments filed on 7 June 2007 have been fully considered but are moot on the new ground(s) of rejection.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 23-44 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Independent claim 23 in lines 13-15 recites "said new ID value based upon a low/high key value, said high key value representing positive infinity and said low key value representing negative infinity". Even though positive and negative infinity values are possible only in theory as an abstract concept, computer memories could not hold either an positive or negative infinity number because computer memories are tangible and only accommodate a finite range of values. As such, the claimed subject matter, i.e., "positive and negative infinity key values", would not enable one skilled in the art to make and/or use the invention.

Claims 24-30 are rejected under 35 U.S.C. 112 first paragraph because said claims depends on claim 23.

Independent claim 31 in lines 13-15 recites "said new ID value based upon a low/high key value, said high key value representing positive infinity and said low key

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value representing negative infinity". Even though positive and negative infinity values are possible only in theory as an abstract concept, computer memories could not hold either an positive or negative infinity number because computer memories are tangible and only accommodate a finite range of values. As such, the claimed subject matter, i.e., "positive and negative infinity key values", would not enable one skilled in the art to make and/or use the invention.

Claims 32-38 are rejected under 35 U.S.C. 112 first paragraph because said claims depends on claim 31.

Independent claim 39 in lines 13-15 recites "said high key value representing positive infinity and said low key value representing negative infinity". Even though positive and negative infinity values are possible only in theory as an abstract concept, computer memories could not hold either an positive or negative infinity number because computer memories are tangible and only accommodate a finite range of values. As such, the claimed subject matter, i.e., "positive and negative infinity key values", would not enable one skilled in the art to make and/or use the invention.

Claims 40-44 are rejected under 35 U.S.C. 112 first paragraph because said claims depends on claim 39.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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7. Claims 23-44 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Independent claim 23 in lines 13-15 recites "said new ID value based upon a low/high key value, said high key value representing positive infinity and said low key value representing negative infinity". Positive and negative infinity values are possible only in theory as an abstract concept. As such, the claimed subject matter, i.e., "positive and negative infinity key values", renders the claim indefinite.

Claims 24-30 are rejected under 35 U.S.C. 112 second paragraph because said claims depends on claim 23.

Independent claim 31 in lines 13-15 recites "said new ID value based upon a low/high key value, said high key value representing positive infinity and said low key value representing negative infinity". Positive and negative infinity values are possible only in theory as an abstract concept. As such, the claimed subject matter, i.e., "positive and negative infinity key values", renders the claim indefinite.

Claims 32-38 are rejected under 35 U.S.C. 112 second paragraph because said claims depends on claim 31.

Independent claim 39 in lines 13-15 recites "said high key value representing positive infinity and said low key value representing negative infinity". Positive and negative infinity values are possible only in theory as an abstract concept. As such, the claimed subject matter, i.e., "positive and negative infinity key values", renders the claim indefinite.

Claims 40-44 are rejected under 35 U.S.C. 112 second paragraph because said claims depends on claim 39.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 23-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Neil et al., (hereinafter "O'Neil") (U.S. Patent Number 6889226) in view of Rizzo et al., (hereinafter "Rizzo") (U.S. Patent Application Publication Number 2004/0068500A1):

As per claim 23, O'Neil is directed to a robust computer-based method for updating a computer-stored hierarchical structure of nodes via a node identification technique, said update retaining properties and parent/child relationships of said hierarchical structure without renumbering existing node ID values associated with said hierarchical structure (Abstract, i.e., *The hierarchically organized data is represented as a tree, and each node in the tree is assigned a position identifier that represents both depth level of the node within the hierarchy, and its ancestor/descendant relationship to other nodes*) and teaches the limitations:

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(a) "receiving an instruction to insert a new node at an insertion point in said computer-stored hierarchical structure" (O'Neil , Figure 6; Figure 3; Figure 5: Column 8 Lines 36-40, i.e., *Figure 5 and 6 show how data can be inserted (or careted) into a hierarchical data structure, while still maintaining the valuable properties of the position identifier numbering scheme described above* );

(b) "identifying one of, or a combination of the following: a left node ID value closest to the left of said insertion point or a closest right node ID value closest to the right of said insertion point" (O'Neil , Column 8 Lines 58-62, i.e., *In this example, nodes 602 and 604 are assigned position numbers "1.2.1" and "1.2.3", respectively, now becoming sibling nodes to the right of 504 and to the left of 506* );

(c) "calculating a new ID value based upon node ID value(s) identified in (b), said calculated value greater than ID values of nodes to the left of said insertion point and less than ID values of nodes to the right of said insertion point" (O'Neil , Column 8 Lines 58-62, i.e., *In this example, nodes 602 and 604 are assigned position numbers "1.2.1" and "1.2.3", respectively, now becoming sibling nodes to the right of 504 and to the left of 506*); and

(d) "updating said computer-stored hierarchical structure by inserting said new node and associating said inserted node with said calculated ID value, wherein order, node ID values, and relationships between parent, child, and siblings in said hierarchical structure of nodes remain unchanged with said insertion of new node" (O'Neil , Column 8 Lines 36-40, i.e., *Figure 5 and 6 show how data can be inserted (or careted) into a*



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*hierarchical data structure, while still maintaining the valuable properties of the position identifier numbering scheme described above).*

O'Neil does not explicitly teach the limitation: "said new ID value based upon a low/high key value, said high key value representing positive infinity and said low key value representing negative infinity".

On the other hand, Rizzo teaches the limitation:

"said new ID value based upon a low/high key value, said high key value representing positive infinity and said low key value representing negative infinity"  
(Rizzo, Paragraph 0056, i.e., *It is necessary to represent two symbolic **values in the key field** data range--specifically a representation for **positive infinity (+INF)** and **negative infinity (-INF)** is required. It is assumed the key field to be represented with  $B$  bits in two's-complement system and to interpret the greatest positive number ( $2^{B-1}-1$ ) as **+INF** and the smallest negative number ( $-2^{B-1}$ ) as **-INF**. The key value has therefore a range of  $[-2^{B-1}+1, 2^{B-1}-2]$ , boundary included).*

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to add the feature of employing a range of keys/ID's which fall between negative infinity and positive infinity, as taught by Rizzo, to the method of O'Neil so that, in the resultant method, new ID value would be based upon a low/high key value, said high key value representing positive infinity and said low key value representing negative infinity. One would have been motivated to do so in order to have a computer interpret positive infinity as the greatest positive number said computer

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could process and interpret negative infinity as the smallest number said computer could process (Rizzo, Paragraph 0056).

As per claim 24, O'Neil in view of Rizzo teaches the limitation:

"wherein said new ID value is calculated via any of the following steps: concatenating said left node ID value with one or more high key values and a positive value, decreasing last digit of said right node ID value, increasing last digit of left node ID value, decreasing last digit of said right node ID value and concatenating a positive value, or concatenating said left node ID value with one or more zeros and a positive value" (O'Neil , Column 9 Lines 10-13, i.e., *If node 610 later needs to be inserted in between nodes 608 and 504, the new node 610 will be numbered "1.0.1 (i.e., "0" is the even number between 1 and -1).*)

As per claim 25, O'Neil teaches the limitation:

"wherein a digit in said calculated ID value has a negative value" (O'Neil , Column 9 Lines 7-10, i.e., *although insertions to the left of a group of siblings may require a negative odd number – e.g., node 608, which is inserted to the left of the node having position number "1.1", has position number "1.-1"*).

As per claim 26, O'Neil teaches the limitation:

"wherein counts between nodes in said hierarchical structure of nodes have a gap and said high key value equal to said gap value" (O'Neil , Column 8 Lines 60-65,

i.e., *In other words, even number component values are skipped in the initial numbering of the nodes, and are reserved for insertions*). In the method of O'Neil, even numbers are left as gaps to be later used as high keys.

As per claim 27, O'Neil teaches the limitation:

"wherein said ID values are encoded and are byte comparable" (Column 10 Lines 30-50, i.e., *The following table shows an exemplary set of Li values, and the prefix-property-obedient bit sequences that represent them*).

As per claim 28, O'Neil teaches the limitation:

"wherein said nodes are associated with a mark-up language based document" (O'Neil , Column 2 Lines 53-62, i.e., *Extensible Markup Language (XML)*; Column 5 Line 38 through Column 6 Line 28, i.e., *Hierarchy structure of data 200*, and *By convention in XML, levels of organization are delimited by*).

As per claim 29, O'Neil teaches the limitation:

"wherein said mark-up based language is XML" (O'Neil , Column 2 Lines 53-62, i.e., *Extensible Markup Language (XML)*).

As per claim 30, O'Neil teaches the limitation:

"wherein said method is implemented in conjunction with a relational database" (O'Neil , Column 2 Lines 55-60, i.e., *The present invention provides a technique for*

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*storing such hierarchical data in a non-hierarchical data structure such as relation, which still maintaining information about the hierarchical structure of the data).*

Claims 31 is essentially the same as claim 23 except that it set forth the claimed invention as an article of manufacture comprising a computer usable medium having readable program code rather than a method and rejected for the same reasons as applied hereinabove.

Claims 32 is essentially the same as claim 24 except that it set forth the claimed invention as an article of manufacture comprising a computer usable medium having readable program code rather than a method and rejected for the same reasons as applied hereinabove.

Claims 33 is essentially the same as claim 27 except that it set forth the claimed invention as an article of manufacture comprising a computer usable medium having readable program code rather than a method and rejected for the same reasons as applied hereinabove.

Claims 34 is essentially the same as claim 28 except that it set forth the claimed invention as an article of manufacture comprising a computer usable medium having readable program code rather than a method and rejected for the same reasons as applied hereinabove.

Claims 35 is essentially the same as claim 29 except that it set forth the claimed invention as an article of manufacture comprising a computer usable medium having readable program code rather than a method and rejected for the same reasons as applied hereinabove.

Claims 36 is essentially the same as claim 30 except that it set forth the claimed invention as an article of manufacture comprising a computer usable medium having readable program code rather than a method and rejected for the same reasons as applied hereinabove.

Claims 37 is essentially the same as claim 26 except that it set forth the claimed invention as an article of manufacture comprising a computer usable medium having readable program code rather than a method and rejected for the same reasons as applied hereinabove.

Claims 38 is essentially the same as claim 25 except that it set forth the claimed invention as an article of manufacture comprising a computer usable medium having readable program code rather than a method and rejected for the same reasons as applied hereinabove.

Referring to claim 39 O'Neal in view of Rizzo teaches the limitations:

(a) "receiving an instruction to insert a new node at an insertion point in said computer-stored hierarchical structure" (O'Neil , Figure 6; Figure 3; Figure 5: Column 8

Lines 36-40, i.e., *Figure 5 and 6 show how data can be inserted (or careted) into a hierarchical data structure, while still maintaining the valuable properties of the position identifier numbering scheme described above*);

(b) "identifying one of, or a combination of the following: a left node ID value closest to the left of said insertion point or a closest right node ID value closest to the right of said insertion point" (O'Neil, Column 8 Lines 58-62, i.e., *In this example, nodes 602 and 604 are assigned position numbers "1.2.1" and "1.2.3", respectively, now becoming sibling nodes to the right of 504 and to the left of 506*);

(c) "calculating a new ID value for node to be inserted" (O'Neal, Column 8 Lines 58-62, i.e., *In this example, nodes 602 and 604 are assigned position numbers "1.2.1" and "1.2.3", respectively, now becoming sibling nodes to the right of 504 and to the left of 506*) "based upon a low key value 0 or a high key value x, said high key value representing positive infinity and said low key value representing negative infinity" (Paragraph 0056, i.e., *It is necessary to represent two symbolic **values in the key field** data range--specifically a representation for **positive infinity (+INF)** and **negative infinity (-INF)** is required. It is assumed the key field to be represented with B bits in two's-complement system and to interpret the greatest positive number ( $2^{B-1}-1$ ) as +INF and the smallest negative number ( $-2^{B-1}$ ) as -INF. The key value has therefore a range of  $[-2^{B-1}+1, 2^{B-1}-2]$ , boundary included*), "said calculation performed via one of the following ways: concatenating said left node ID value with one or more high key values and a positive value or concatenating said left ID value with one or more low key values and a positive value" (O'Neil, Column 9 Lines 10-13, i.e., *If node 610 later needs to be*

*inserted in between nodes 608 and 504, the new node 610 will be numbered "1.0.1 (i.e., "0" is the even number between 1 and -1; Column 8 Lines 58-62, i.e., In this example, nodes 602 and 604 are assigned position numbers "1.2.1" and "1.2.3", respectively, now becoming sibling nodes to the right of 504 and to the left of 506); and*

(d) "updating said computer-stored hierarchical structure by inserting said new node and associating said inserted node with said calculated ID value, wherein order, node ID values, and relationships between parent, child, and siblings in said hierarchical structure of nodes remain unchanged with said insertion of new node" (O'Neil, Column 8 Lines 36-40, i.e., *Figure 5 and 6 show how data can be inserted (or careted) into a hierarchical data structure, while still maintaining the valuable properties of the position identifier numbering scheme described above).*

Claim 40 is rejected on the same basis as claim 25.

Claim 41 is rejected on the same basis as claim 27.

Claim 42 is rejected on the same basis as claim 28.

Claim 43 is rejected on the same basis as claim 29.

Claim 44 is rejected on the same basis as claim 30.

### ***Conclusion***

10. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.





### **Contact Information**

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Myint whose telephone number is (571) 272-5629. The examiner can normally be reached on 8:30AM-5:30PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-5629.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
**SHAHID ALAM**  
**PRIMARY EXAMINER**

  
Dennis Myint  
Examiner  
AU-2162